Hydrology and
Earth System
Sciences

Open Access

Discussions

HESSD

Interactive
comment

Interactive comment on "Evaluation of various daily precipitation products for large-scale hydro-climatic applications over Canada" *by Jefferson S. Wong et al.*

Anonymous Referee #1

Received and published: 3 November 2016

The authors evaluated various gridded precipitation datasets against long-term station data in order to assess accuracy of each datasets. The presence of multiple gridded precipitation datasets available to researchers these days, assessing the accuracy of these datasets (or more appropriately uncertainties in these available datasets) is a very important concern in hydrological research. From the point, this work can be a significant contribution to the hydrologic research for Canada. Despite its importance, I found a number of questions that need to be answered before this one is accepted for publication.

Specific comments:

(1) The authors compare gridded precipitation products against data at individual sta-

Printer-friendly version

Discussion paper

tions. A rain gauge data represents only a small area but the gridded data evaluated in this study, especially those based on model products, represent values at much larger area, essentially averages over individual grid boxes. How can we expect that a rain gauge data can represent an average value of hundreds of square kilometers? This must be thoroughly discussed to justify their methodology.

(2) To prepare for evaluations, the authors first interpolated all gridded data into a common grid of 0.5deg resolutions, then they re-interpolated from the grid to the location of individual rain gauges. This data processing includes two spatial interpolations. Because every interpolation step introduces its own errors or uncertainties, the number of interpolation steps must be as small as possible. I wonder why they did not directly interpolate each data set to the rain gauge locations without going through the intermediate grid? This can simply data processing and can reduce interpolation-related uncertainties.

(3) Model products based on RCP scenarios includes the effects of hypothetical emissions pathways implemented in these simulations. How can these model data be compared against the reference data in the same way as other assimilated and/or station-based gridded data? The authors evaluate these data sets for two periods, 1979-2012 and 2002-2012. The CMIP5 experiment that seem relevant to the model data used in this study was designed in such a way that the present-day period simulation based on the realistic GHG concentration for the period from mid-19th century to 2005. Future projections based on specific RCP scenarios starts from 2005 up to 2300 with the initial condition taken at the end of the present-day simulation period. Thus all model data after 2005 are affected by hypothetical emissions pathways. It's pretty unusual discussing "accuracy" of the data generated to project future on the basis of hypothetical GHG concentrations. If the authors are interested in evaluating the model-generated data, the comparison must end in 2005, the end of the present-day period for which the observed external forcing and GHG concentration are implemented. For such periods, there is no need to distinguish runs according to RCP scenarios because the hypo-

thetical emissions pathways are not implemented. My suggestion is to drop model data from the evaluation, or include the model data and limited the evaluation period to 2005 instead of 2012.

(4) The authors provide lengthy descriptions on the details of the data sets used in this study. Much of these discussions are unnecessary because they were developed by other research groups and relevant publications on the details of these data sets are already available. Sections 3.1 and 3.2 can be reduced by referencing suitable publications.

(5) All figures are too busy to read. Need to make them bigger.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-511, 2016.